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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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EXAMINER
WILFORD

ART UNIT	PAPER NUMBER
2814	

DATE MAILED: 03/25/99

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 08/866,129	Applicant(s) Uemura et al.
	Examiner Douglas Wille	Group Art Unit 2814

X Responsive to communication(s) filed on *Jan 19, 1999* .

X This action is **FINAL.**

Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *3* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

X Claim(s) *1-14, 20, and 21* is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

Claim(s) _____ is/are allowed.

X Claim(s) *1-14, 20, and 21* is/are rejected.

Claim(s) _____ is/are objected to.

Claims _____ are subject to restriction or election requirement.

Application Papers

See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

The drawing(s) filed on _____ is/are objected to by the Examiner.

The proposed drawing correction, filed on _____ is ___ approved ___ disapproved.

The specification is objected to by the Examiner.

The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

___ All ___ Some* ___ None of the CERTIFIED copies of the priority documents have been

___ received.

___ received in Application No. (Series Code/Serial Number) _____ .

___ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____ .

Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

Notice of References Cited, PTO-892

Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

Interview Summary, PTO-413

Notice of Draftsperson's Patent Drawing Review, PTO-948

Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 12 - 14 and 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Nakamura et al.('422)

3. With respect to claims 12 - 14, Nakamura et al.('422) show a group III compound semiconductor device (see Figure 1) with a p-type upper layer 13 and an electrode consisting of a layer of Ni with a layer of Au on top (column 5, line 49). Figure 7 shows a modification of the Figure 1 device which has a contact layer 15 and a bonding pad 17 that covers part of layer 15 and has a protective film of silicon oxide (column 10, line 26). The other properties in claim 12 are inherent in the materials.

4. With respect to claim 21, Nakamura ('422) shows a structure with a AuNi layer covering part of a Ni and Au layer and will inherently have the same properties as claimed.

Claim Rejections - 35 USC § 103

5. Claims 1 - 11, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura et al.('422) in view of Manabe et al. and Nakamura et al.('350).

6. Nakamura et al.('422) show a group III compound semiconductor device (see Figure 1) with a p-type upper layer 13 and an electrode consisting of a layer of Ni with a layer of Au on top (column 5, line 49). Figure 7 shows a modification of the Figure 1 device which has a contact layer 15 and a bonding pad 17 that covers part of layer 15 and has a protective film of silicon oxide (column 10, line 26). Nakamura et al.('422) also show that the bonding pad 17 is composed of Ni and Au but teach against the use of Al (in a two layer structure) since it can migrate to the electrode and can degrade it. Manabe et al. show the use of Al in a multilayer electrode stack (see Figure 6 and column 5, line 38) which has improved operating characteristics. It would have been obvious to modify the Nakamura et al.('422)device to include the Al layer as taught by Manabe et al. with the expectation that the two intervening layers will protect the electrode from deterioration. Nakamura et al.('422) also teach annealing at 600 degrees (column 7, line 38) and teach the LED compound is $In_xAl_yGa_{1-x-y}N$. Nakamura et al.('350) show that the silicon oxide protective layer is SiO_2 (column 34, line 66). The remainder of the claimed features are inherent in the choice of materials. Forming the layers in the sequence Ni-Au-Al follows the decreasing sequence of work functions and would also be obvious.

7. With respect to claim 20, Nakamura ('422) shows a structure with a AuNi layer covering part of a Ni and Au layer and will inherently have the same properties as claimed.

Response to Arguments

8. Applicant's arguments filed 1/19/99 have been fully considered but they are not persuasive

9. Applicant argues that neither Nakamura references shows a three layer structure, which is true, but Manabe is relied upon to teach the third layer. Applicant also attempts to distinguish between an electrode pad and an electrode with the difference depending only upon the relative placement of the layers, thus calling the lower NiAu layer the electrode and calling the upper AuNi layers the pad. However, the claim is addressed to the three layer structure and this structure is shown in the prior art quoted. Note also that Nakamura ('422) shows a separate layer on top of the two layer structure.

10. Applicant states that none of the references show the Ni Au reversal but note that Nakamura ('422) shows the layer sequence of Ni and Au with a partial covering of NiAu and further shows an annealing at greater than 400 degrees C (column 5, line 65). Thus with identical structure and identical processing, identical results will be obtained.

Conclusions

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

12. A shortened statutory period for response to this final action is set to expire THREE MONTHS from the date of this action. In the event a first response is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event will the statutory period for response expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas A. Wille whose telephone number is (703) 308-4949.

14. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose number is (703) 308-0956.

Olik Chaudhuri
Supervisory Patent Examiner
Art Unit 2814

DAW

March 17, 1999